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# Info

## *What is a riparian forest buffer?*

# Working Trees

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Woody vegetation in Riparian Forest Buffers provides food and cover for wildlife, helps lower water temperatures and slows out-of-bank floodwaters. — NAC photo

**R**iparian Forest Buffers are natural or re-established woodlands next to streams, lakes and wetlands.

These buffers usually consist of trees, shrubs and grass plantings that are managed to enhance and protect aquatic resources from adverse impacts from the management of adjacent lands.

Riparian Forest Buffers intercept sediment, nutrients, pesticides and other materials in surface runoff and in shallow subsurface water flow so they don't get into the streams, lakes or

wetlands. Temperatures in cold water streams can be maintained with shade from trees along their banks. Woody vegetation also reduces bank erosion by absorbing energy from wave action and by the roots holding soil in place.

Some tree and shrub species can be managed in a Riparian Forest Buffer for bioenergy feedstocks, fiber, floral, food, herbal, timber and other products. The inclusion of woody plants into an agricultural landscape also increases biodiversity and habitat diversity.

## Benefits of riparian forest buffers

**Diversification of income** — Landowners can increase farm and ranch income by using a diversity of trees and shrubs in their buffers. Crops such as nuts, berries, craft materials and bioenergy feedstocks can be harvested without reducing the buffer effectiveness.

**Reduced flood damage** — Woody buffers reduce floodwater velocity and erosive power and block stream debris from entering cropland, grassland, and urban lands. Buffers also act as sponges, which slow surface runoff and reduce peak flows and downstream impacts from storm events.

**Improved water quality** — Woody plants and their roots help reduce streambank erosion, trap erosion sediments, increase water infiltration and absorb excess nutrients, pesticides and other contaminants.

**Increased wildlife** — Woody plants in buffers can increase habitat diversity, shade streams and increase food for songbirds and other wildlife, including salamanders and pollinators. This may provide opportunities for recreational uses, such as bird watching, fishing, hiking and hunting.



# Considerations for riparian forest buffers

**Management Objectives:** Determine what problems are present at the site along with other needs or desires that can be addressed. This will help facilitate proper buffer design and application. By addressing multiple issues, the design will create a multi-functional Riparian Forest Buffer with numerous benefits.

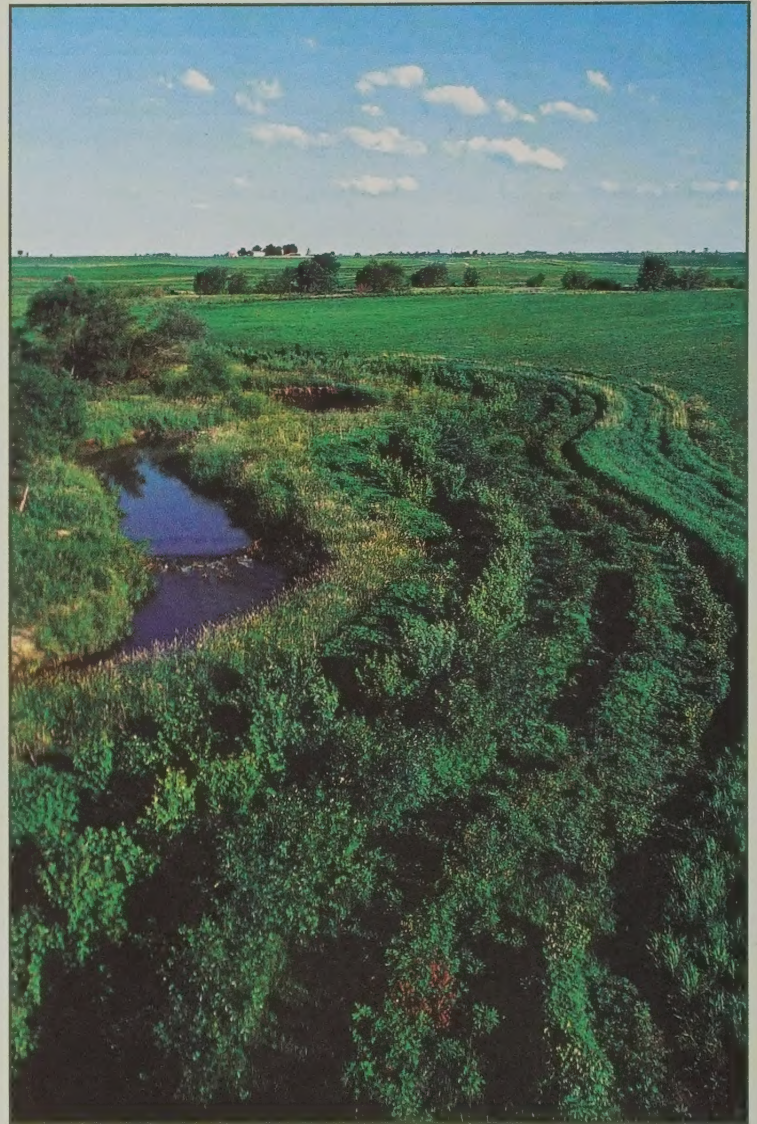
**Vegetation type:** The possible combinations of trees and shrubs are nearly endless. The woody rows of buffers can be designed to include plants that produce berries, florals, wildlife food and many other products. Flood frequency and duration are significant factors to consider when selecting plant species. When stream shading is a primary goal use tall trees for maximum shade.

**Soil type:** Knowing what types of soils are present on the site is critical. Many woody species are very site specific and if placed on the wrong site will either die or, at best, not perform as desired. Soils information can be easily obtained at your local USDA Service Center or from the web (see below).

**Bank stability:** The banks of streams and wetlands are constantly changing. Landowner knowledge of active bank erosion or bank stability is extremely useful in determining where to locate a buffer or if it is even practical. Before a Riparian Forest Buffer is installed, other practices may be required such as bank stabilization or even management of larger watershed drainage issues.

**Buffer width:** The buffer width may vary along its length depending on the site conditions. Generally, the function that requires the greatest width will dictate the minimum width of the buffer. "Conservation Buffers — Design Guidelines for Buffers, Corridors, and Greenways" is an excellent publication to help determine proper buffer widths (see below).

**Operation and management:** All conservation buffers are dynamic and require varying levels of management as a result of flooding, pest infestation, herbicide damage, weed control or the harvesting of desirable products from the buffer. In each case the management activity must be evaluated keeping in mind the potential impact it will have on desired buffer functions.



Riparian Forest Buffers intercept sediment, nutrients, pesticides and other materials in surface runoff and reduce nutrients in sub-surface water flow.

— NRCS photo

## More information on the Web

USDA National Agroforestry Center [www.unl.edu/nac/riparianforestbuffers.htm](http://www.unl.edu/nac/riparianforestbuffers.htm)

USDA Natural Resources Conservation Service [www.nrcs.usda.gov/technical/standards/nhcp.html](http://www.nrcs.usda.gov/technical/standards/nhcp.html)

"Conservation Buffers — Design Guidelines for Buffers, Corridors, and Greenways" [www.bufferguidelines.org](http://www.bufferguidelines.org)

USDA Web Soil Survey <http://websoilsurvey.nrcs.usda.gov/>

The Center for Agroforestry [www.centerforagroforestry.org/practices/rb.php](http://www.centerforagroforestry.org/practices/rb.php)

Association for Temperate Agroforestry [www.aftaweb.org/riparian\\_buffers.php](http://www.aftaweb.org/riparian_buffers.php)



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Contact: USDA National Agroforestry Center, 402.437.5178 ext. 4011, 1945 N. 38th St., Lincoln, Nebraska 68583-0822. [www.unl.edu/nac](http://www.unl.edu/nac)

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